S/539/61/000/032/017/017
D235/D301

Electrometric methods of ...

acid in anhydrous acetic acid is used as an acid titrant. The titration was carried out potentiometrically using a potentiometer with glass and calomel electrodes. The best solvent was acetonitrile which has a high dielectric permeability and readily dissolves the titrant and reaction substances; benzene was added to it in the ratio of 1:1. Potentiometric curves are given for methyl chlorosilanes, for which a special cell was constructed because of the volatility and ready hydrolytic breakdown of the products. New methods, the latter two not previously described in the literature, are developed for: 1) titrating binary and ternary mixtures of trimethyl chlorosilane, dimethyl dichlorosilane and methyl trichlorosilane; this method is based on preliminary quantitative transformation of the alkyl silanes to alkyl-thiocyanate substitutes by means of ammonium rhodanide and subsequent conductometric titration with a benzene solution of dimethylaminoantipyrine in acetonitrile-diethyl ether in a ratio of 2:3; 2) potentiometrically titrating alkyl aminosilanes and silamines in a mixture of solvents (acetonitrile + benzene or nitromethane + dioxane) using hydrochloric acid as the titrant; 3) for titrating weak

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S/539/61/000/032/017/017
D235/D301

Electrometric methods of ...

silicon organic acids and mixtures with monobasic and dibasic carbon containing acids; results are given for the titration of o-phthalic and succinic acids and two silicon-organic compounds containing the two organic acids. The methods described are in some cases accurate to ± 2%. There are 4 figures and 22 references: 14 Soviet-bloc and 8 non-Soviet-bloc. The 4 most recent references to the English language publications are as follows: R.M. Fuoss, J.Amer.Chem.Soc., 79, 3301, (1957); R.M. Fuoss and C.A. Kraus, Ibid, 79, 3304 (1957); I.M. Kolthoff and S. Bruckenstein, Ibid, 78, 1,10(1956); C. Kraus, J.Phys.Chem.60,129 (1956).

Card 3/3

S/661/61/000/006/080/081
D287/D302

AUTHORS: Khramova, V. I. and Kreshkov, A. P.

TITLE: Improving the properties of cement mortars by introducing organosilicon compounds

SOURCE: Khimiya i prakticheskoye primeneniye kremneorganicheskikh soyedineniy; trudy konferentsii, no. 6: Doklady, diskussii, resheniye. II Vses. konfer. po khimii i prakt. prim. kremneorg. soyed., Len. 1958, Leningrad, Izd-vo AN SSSR, 1961, 342-345

TEXT: A discussion of the paper in this publication, no. 4, p.101. V. I. Khramova stated that the following additives were superior in quality to ordinary additives: Ester of the o-silicic acid, the vat residue obtained during the distillation of the aforementioned compound and the product obtained by the interaction of this compound with soluble potassium glass. These compounds, added in small quantities, are excellent hardening accelerators, increase the strength of the cement mortars by up to 20%, and have an effect on

Card 1/3

Improving the properties ...

on the weather resistance of the cement mortars. D. A. Karatcyev (MKhTI) discussed the synthesis of organic phosphoro-silicon compounds and their use as cement mortar additives. A 30% increase in the strength of the cement mortar is achieved by adding 0.5% quantities of these compounds, and only a 20% increase in strength when adding tetraethoxysilane. Silicon phosphate additives are even more suitable, especially with regard to the water-permeability of the mortars. These additives are cheap as, for instance, only 0.25 - 1% quantities (by weight of the cement) of ethoxypolysiloxane phosphate have to be added to the cement mortar. V. M. Zhigalkovich (Institut stroymaterialov, Minsk (Institute for Building Materials, Minsk)) mentioned the increasing use of foam silicates and the use of additives for increasing the frost-resistance of products. Matveyev (Stroytel'nyy institut Mosgorispolkoma (Building Institute Mosgorispolkom)) outlined experiments for preparing alkaline organosilicon compounds by reacting tetraethoxysilane with metal hydroxides; these compounds are readily soluble in H_2O ; the solutions have good drying properties and the residue shows, on heat-

Card 2/3

Improving the properties ...

ing, only a minimum degree of swelling. Various uses of these compounds in the steel industry are also discussed. New grades of cement (especially acid-resistant cements) showed considerably improved physical and chemical properties (tested according to ГОСТ-310 1941 (GOST-310 1941). Cement based on low-burnt clay was also prepared and used for making blocks of 250 kg/cm^2 strength.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut im. D. I. Mendeleyeva (Moscow Institute for Chemistry and Technology im. D. I. Mendeleyev)

Card 3/3

KRESHKOV, A.P.; BYKOVA, L.N.; KAZARYAN, N.A.

Differential titration of strong, weak, and very weak acid mixtures in methyl ethyl ketone media. Izv.vys.ucheb.zav.; khim.i khim.tekh. 4 no.1:20-24 '61. (MIRA 14:6)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I. Mendeleyeva, kafedra analiticheskoy khimii.
(Acids) (Titration)

42953

S/081/62/000/022/060/088
B166/B144

15.8130

AUTHORS: Kreshkov, A. P., Mikhaylenko, Yu. Ya., Rybal'chenko, M. A.

TITLE: Quantitative analysis of epoxy resins

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 22, 1962, 479, abstract 22P18 (Vestn. tekhn. i ekon. inform. N.-i. in-t tekhn.-ekon. issled. Gos. kom-ta Sov. Min. SSSR po khimii, no. 9, 1961, 26-29)

TEXT: The method for the quantitative determination of epoxy groups (EG) is based on the dependence of the 912 cm^{-1} (10.96μ) absorption band intensity in the IR region on the EG content of resins. Free phenol is used as the internal standard, in such a quantity that its concentration is constant in comparison with that of the EG. The EG content was determined from a calibration curve: ratio of the optical density of the epoxy and phenyl groups - percentage EG content in the resins. A table gives coinciding results for the quantity of EG in modified and in unmodified epoxy resins as obtained by chemical and by spectral analysis. [Abstracter's note: Complete translation.]

Card 1/1

KRESHKOV, A.P.; DROZDOV, V.A.; VLASOVA, Ye.G.; VLASOV, S.V.; BUSLAYEV, Yu.A.

Potentiometric titration in anhydrous media as a means of studying the properties of fluorides in some polyvalent metals. Atom. energ. 11 no.6:553-554 D '61. (MIRA 14:11)
(Potentiometric analysis) (Fluorides)

KRESHKOV, A.P.; BYKOVA, L.N.; KAZARYAN, N.A.

Potentiometric titration of multicomponent and mixtures in nonaqueous solutions. Zhur.anal.khim. 16 no.2:129-134 Mr-Ap '61. (MIRA 14:5)

1. Mendeleyev Moscow Chemico-Technological Institute.
(Potentiometric analysis)

KRESHKOV, A.P.; BYKOVA, L.N.; SHEMET, N. Sh.

Separate potentiometric titration of mixtures of organic bases in a methylethylketone medium with a perchloric acid solution. Zhur.anal.khim. 16 no.3:331-336 My-Je '61. (MIRA 14:6)

1. D. I. Mendeleev Moscow Chemico-Technological Institute.
(Bases (Chemistry))

S/032/61/027/002/004/026
B134/B206

AUTHORS: Kreshkov, A. P., Bork, V. A., and Shvyrkova, L. A.

TITLE: Quantitative analysis of products of direct synthesis of alkyl chloro silanes

PERIODICAL: Zavodskaya laboratoriya, v. 27, no. 2, 1961, 147-149

TEXT: A satisfactory method has so far not been elaborated for the production control of alkyl chloro silanes and their derivatives. In the present case, a method is described which permits a quick and simple determination of the individual components in the mixture of alkyl chloro silanes. The determination of methyl trichloro silane is based on the formation of solid polymer compounds after hydrolytic cleavage and subsequent condensation of the resulting methyl silanetriol. Under these conditions, the other methyl chloro silanes form liquid linear polymers so that the amount of solid polymer can be quantitatively determined by gravimetry or nephelometry. The determination of hydrogen-containing methyl chloro silanes is based on an oxidation of the $\equiv SiH$ bond with permanganate. $SiCl_4$ is determined by means of an aqueous solution of

molybdate, since silicon molybdenum heteropoly acid forms thereby which can be photometrically determined owing to its blue color. The other compounds showing a ≡Si-C≡ bond do not react with ammonium molybdate. Trimethyl chloro silane is determined by a method previously described (Ref. 9), while the content of dimethyl dichloro silane in the mixture can be calculated from the difference. From the working technique described it can be seen that for the nephelometric determination of methyl trichloro silane in the mixture by means of an ФЭК-М (FEK-M) instrument, a calibration curve must be plotted, since the degree of turbidity depends on the way the mixture was prepared. Up to 10% dimethyl dichloro silane and up to 5% trimethyl chloro silane do not disturb the determination. The content of methyl trichloro silane according to the gravimetric method is calculated by the equation $CH_3SiCl_3 = (a_{SiO_2} + 2.33)/0.16$ (a_{SiO_2} = quantity of SiO_2 weighed after igniting. For the determination of $SiCl_4$, a somewhat modified method (Ref. 10) is applied to determine the ortho-silicic acid ester. The analytical results show that $SiCl_4$ can be determined by this method in

the presence of methyl chloro silanes. There are 2 figures, 2 tables, and 10 references: 8 Soviet-bloc and 2 non-Soviet-bloc.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut im. D. I. Mendeleyeva
(Moscow Institute of Chemical Technology imeni D. I. Mendeleyev)

Card 3/3

KRESHKOV, A.P.

Conference on the analysis of organic compounds. Zav.lab. 27 no.8:1046 '61. (MIRA 14:7)
(Chemistry, Analytical--Congresses) (Organic compounds)

24422

S/079/61/031/007/004/008
D229/D305

15.8170

AUTHORS: Kreshkov, A.P., Karateyev, D.A., and Fyurst, V.

TITLE: Study of the interaction of some alkyl- and arylalkoxysilanes with boric acid

PERIODICAL: Zhurnal obshchey khimii, v. 31, no. 7, 1961, 2139 - 2143

TEXT: This is a report on syntheses and properties of new polymeric silico-boron-organic compounds namely: polymethylsilyl borate $(CH_3SiO_3B)_n$, polyethylsilylborate - $(C_2H_5SiO_3B)_n$, polyphenylsilylborate - $(C_6H_5\ SiO_3B)_n$, diethylpolysiloxaneborate $\{[(C_2H_5)_2Si]_3(BO_3)_2\}n$ and $\{[(CH_3)(C_6H_5)SiO_{1.5}]_3\ B\}\ n$, synthesized by interaction of boric acid with methyltriethoxysilane, ethyltriethoxysilane, phenyltriethoxysilane, diethyl-diethoxysilane and methylphenyldiethoxysilane respectively. Silico-boron-organic compounds have prac-

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Study of the interaction of ...

tical applicability. They can be synthetized by interaction of silico-organic compounds with inorganic boron compounds (BBr_3, BCl_3, BF_3, B_2H_6, B_2H_5Br etc.) and by the interaction of alkyl/aryl/alkoxy- or halogenosilanes with boric acid. Tri(trialkylsilyl)borates were also obtained by the interaction of boric acid with trialkylsilanols (Ref. 4: N.F. Orlov, and B.N. Dolgov, Voronkov, M.G., Avt. svid 115157,1958) and by the interaction of boric acid with trialkylsilanes (Ref. 3: N.F. Orlov, B.N. Dolgov, and M.G. Voronkov, Trudy konferentsii po khimii i prakticheskomu primenenyu kremneorganicheskikh soedineniy (Conference on Chemistry and Practical Application of Silico-Organic Compounds) vyn. 1. TSBTI. L. 161, 1958). M.G. Voronkov and B.N. Zgonnik determined that the interaction of dimethyldichlorosilane with boric acid formed dimethylpolysiloxaneborate; the interaction of methyltriethoxysilane with boric acid formed ($B_2O_3 \cdot 4CH_3SiO_{1.5}$)n; interaction of dimethyldiethoxysilane with boric acid formed [($B_2O_3 \cdot 6(CH_3)_2SiO$]n which can be represen-

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Study of the interaction of ...

ted as 2 $\{[(CH_3)_2SiO_{1.5}]_3B\}$ n the last reaction being as follows: $3n\ B(OH)_3 + 6n(CH_3)_2\ Si(OC_2H_5)_2 \rightarrow [B_2O_3 \cdot 6(CH_3)_2\ SiO]n + 9nC_2H_5OH + n\ B(OC_2H_5)_3$. Kreshkov and associates (Ref. 6: A.P. Kreshkov, S.S. Vil'borg, Tr. MKhTI im. D.I. Mendeleyeva, 12, 40/1947, ZhOKh, 18, 172, 1948) found that at the high temperature alkyl/aryl/methoxy- or ethoxysilanes reacted with boric acid to form the methyl or ethyl esters of boric acid which colored the flame green. The above secondary reaction of the formation of ethyl ester of boric acid also took place. Molecular weight of the synthesized polymeric compounds of the type $[(R_2Si)_3(BO_3)_2]n$ and $\{[(CH_3)(C_6H_5)\ SiO_{1.5}]_3\ B\}$ n was determined by Rast's method with benzoic acid. For all three compounds $n \approx 8$. Combustion microanalysis was used to determine the amounts of the constituents of products. Silicon was determined by the "wet method" (Ref. 10: A.P. Kreshkov, G.D. Nessonova, ZhOKh, 19, 660, 1949). Boron was determined as boric acid by titration with 0.1 N NaOH in the presence of mannitol with a phenolphthalein

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indicator after the weighed amount ($\sim$0.1 gr) of substance was dissolved in an excess of sodium hydroxide and neutralized with 0.1 N hydrochloric acid using methyl red indicator. Qualitative tests for the presence of hydroxyl and ethoxy were negative. The infra-red spectra of obtained polymeric silico-boron-organic compounds were studied. The infra-red spectra of $(CH_3SiO_3\ B)_n$ and of $(C_2H_5SiO_3\ B)_n$ had absorption bands of different wave-lengths characteristic for different groups and bonds: 9.60 and 9.55 μ (Si-O), 740 and 7.30 μ (B-O), 12.75 and 12.70 μ ($Si-CH_3$). 3.20 and 3.15 μ (C-H) and 6.5 μ (CH_3) which was in agreement with data from literature (Ref. 12: A.P. Kreshkov, V.A. Bork, L.V. Myshlyayeva, and G.D. Nessonova, Analiz kremniyorganicheskikh soedineniy (Analysis of Silicon Organic Compounds) GKhI, M., 1954). There was no absorption band of the wave-length of 2.71 μ due to hydroxyl groups, which proved the absence of this group in synthesised polymeric silico-boron-organic compounds. X-ray analysis for all compounds of the

Study of the interaction of ...

type $(RSiO_3B)_n$ showed the absence of crystallinity. There are 1 figure, 2 tables and 14 references: 10 Soviet-bloc and 4 non-Soviet-bloc. The references to the English-language publications read as follows: US. Pat. 2440101, 1949, Ch. A. 42, 6376, 1948; British Patent 643298, 1950, Ch. A. 45, 7819, 1951; F.S. Kipping, J. Chem. Soc. 1927, 2728; L.I. Bellamy, M.E. Lappert, J. Chem. Soc., 1958, 2412.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I. Mendeleyeva (Moscow Chemical-Engineering Institute imeni D.I. Mendeleyev)

SUBMITTED: July 18, 1960

Card 5/5

15 8312

27510
S/079/61/031/009/011/012
D215/D306

AUTHORS: Kreshkov, A.P., Drozdov, V.A., and Kubiak, S.

TITLE: Properties of alkylchlorosilanes in acetonitrile medium

PERIODICAL: Zhurnal obshchey khimii, v. 31, no. 9, 1961, 3099 - 3103

TEXT: The present work deals with the conductometric examinations of methylchlorosilanes. The conductometric titration was carried out in a series of organic solvents and the measurements were taken of specific and equivalent conductivities of methylchlorosilanes in acetonitrile medium. The choice of acetonitrile was made due to its excellent properties as a solvent for inorganic, organic and organosilicon compounds, ability to increase the dissociation of salts, acids and bases and also its low association in liquid state as compared with that of methanol or ethanol. According to R.S. Mulliken (Ref. 4: J. Phys. Chem. 56, 814, 1952) donoracceptor classification acetonitrile may function in two ways, as base con-

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S/079/61/031/009/011/012
D215/D306

Properties of ...

taining easily ionizable pair of electrons and as π-ketoidal acceptor. The compounds used in the investigations were pure trimethylchlorosilane, dimethyldichlorosilane and methyltrichlorosilane, titrants were organic bases containing tertiary nitrogen atoms (pyridine, quinoline, 8-hydroxyquinoline, dimethylaminoantipyrine etc.). Conductometric titration was conducted with the aid of kohlrausch bridge and a closed-type cell with sealed platinum plated platinum electrode. Measurements of electroconductivity of methylchlorosilanes in acetonitrite medium was carried out in thermostatically controlled 50 cc spherical vessel. The coice of medium for conducting the measurements was carried out experimentally using methylchlorosilane in various organic solvents such as acetonitrile, benzonitrile, nitromethane, nitrobenzene, cyclohexanone, methyl ethyl ketone and methyl butyl ketone, and an organic base as a titrant. Typical conductometric titration curves are given in Fig. 1, and it is shown that the best medium is provided by acetonitrile. The titration curves for various methylchlorosilanes are given in Fig. 2. They are shown to exhibit two characteri-

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stic points: one (minimum) which corresponds to about half-way titration, and the other (beginning of horizontal portion) exact end point also given by bromocresol purple indicator (colorless to bright yellow). On reacting with organic bases, methylchlorosilanes behave as acids and the chemical processes may be represented as follows: $2R_nSiCl_{4-n}$ + amine $\rightleftharpoons$ $(2R_nSiCl_{4-n})$ amine for the half-way point and for the end point: $(2R_nSiCl_{4-n})$ amine + amine $\rightleftharpoons$ 2 $[(R_nSiCl_{4-n})\cdot amine]$. The formation of this complex is accompanied by the increased conductivity of the solution due probably to its dissociation. On the other hand the half-way titration complex is more stable and causes the increase in the resistance of the solution accompanied by the reduction in conductivity. To establish the possible electrolytic dissociation of pure methylchlorosilanes the authors have measured conductivity of the latter in acetonitrile medium at constant temperature (26°C). The variations of specific and equivalent conductivities of methylchlorosilanes on dilution with acetonitrile solutions is represented in Fig. 4. As

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the dilution increases λ increases as a result of higher degree of dissociation (α). The relationship of λ to dilution shows that methylchlorosilanes behave as weak electrolytes in non aqueous media and conform to Ostwald's law. The process of formation of current-conducting acetonitrile solutions of alkylchlorosilanes may be illustrated on the example of trimethylchlorosilane. Knowing the ionic mobility of the dissociation products it is possible to calculate dissociation constants for every methylchlorosilane. The degree of dissociation is highest for trimethylchlorosilane and lowest for methyltrichlorosilane. There are 4 figures and 6 references: 2 Soviet-bloc and 4 non-Soviet-bloc. The 3 references to the English-language publications read as follows: E.A. Abrahamson, C.A. Reynolds, Anal. Ch., 24, 1827, 1952; R.S. Mulliken, J. Phys. Chem., 56, 814, 1952; E.A. Jerger, G.M. Barrow, J. Am.Chem. Soc., 77, 4474, 6-06, 1955.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut im. D.I. Mendeleyeva (Moscow Institute of Chemistry and Technology im. D.I. Mendeleyev)

SUBMITTED: September 30, 1960

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S/080/61/034/012/011/017
D227/D305

53/60

AUTHORS: Kreshkov, A.P., Karateyev, D.A., and Fyurst, V.

TITLE: Investigating reactions of organic silicon compounds containing vinyl groups connected directly with a silicon atom, with boracic and phosphoric acids and phosphorus pentoxide

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 12, 1961, 2711 - 2716

TEXT: This is a study of reactions of various unsaturated compounds containing $Si-CH=CH_2$ bonds and functional groups ($-OC_2H_5$, CH_3COO-) attached to a silicon atom. From the products obtained and from the reactions with alcohols, esters, acetic acid etc., the authors were able to establish the mechanism of the reactions. They found that di-functional and tri-functional unsaturated organosilicons react with boracic acid in the following manner:

$$3n\,RR'Si(OR'')_2 + 2n\,B(OH)_3 \rightarrow ([RR'Si]_3(BO_3)_2)_n + 6n\,R''OH.$$

where $R-CH_3$, $R'-CH_2=CH-$, $R''-CH_3CO-$).

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Investigating reactions of ...

$$n\,RSi(OR')_3 + n\,B(OH)_3 \rightarrow (RSiO_3B)_n + 3n\,R'OH,$$

where ($R - CH_2{=}CH -$, $R' - C_2H_5$).

from which it is clear that only Si-O-C bonds react while Si-O-Si bonds remain intact. The reactions of divinyltetraethoxydisiloxane and vinyltriethoxysilane with P_2O_5 -

$$n\,[RSi(OR')_2]_2O + n\,P_2O_5 \rightarrow \left[\begin{array}{l} O_{1/2} \quad O \\ RSi-O-P-O_{1/2} \\ OR' \quad OR' \end{array}\right]_{2n} + n\,R'_2O,$$

$$2n\,RSi(OR')_3 + n\,P_2O_5 \rightarrow$$

where ($R - CH_2{=}CH -$, $R' - C_2H_5 -$).

leads to the formation of the identical products and show that both Si-O-C and Si-O-Si take part in the reaction. The reaction of methylvinyldiacetoxysilane with phosphoric acid is as follows:

$$3n\left[\begin{array}{l} CH_2{=}CH \\ CH_3 \end{array}\!\!>\!Si(OCOCH_3)_2\right] + 2n\,H_3PO_4 \rightarrow$$

$$\rightarrow [(CH_3)CH_2{=}CHSi]_3(PO_4)_2]_n + 6n\,CH_3COOH.$$

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3147h

S/080/61/034/012/011/017
D227/D305

Investigating reactions of ...

The products of all the reactions representing low molecular weight organosilicon-boron and organosilicon-phosphorus polymers were examined by chemical and physical methods to establish their empirical and structural formulae. Polymerization of unsaturated organosilicon compounds has been found to be more difficult than that of the unsaturated hydrocarbons and to require special catalyzers and high pressures, owing to the passivating effect of silicon on the double bonds; this explains the preservation of $Si-CH=CH_2$ bonds in these polymers. In all cases the analysis showed good agreement with the empirical formulae. Vinyldiethoxypolysiloxanephosphate $([CH_2 = CHSi(OC_2H_5)_2PO_{2.5}]_2O)_n$ was prepared by heating the monomer with P_2O_5. The product obtained was in the form of lemon colored mass insoluble in common organic solvents but soluble in alkali. When methylvinyldiacetoxysilane was heated with phosphoric acid at 180°C acetic acid was liberated and the product was obtained in the form of a solid, soluble in ethanol, less soluble in chloroform, but easily hydrolyzed in aqueous and alkaline solutions. All the products obtained were analyzed to determine Si, C, H, B and P contents and also presence of alkoxy groups and double bonds. Infra-

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Investigating reactions of ....

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S/080/61/034/012/011/017
D227/D305

red spectra were determined by Yu.Ya. Mikhailenko. The authors suggest that organosilicon-boron and -phosphorus compounds may be added to various plastic masses in order to give them thermal stability and resistance to oils, and to improve some of the properties of cement solutions. There are 1 figure and 22 references: 19 Soviet-bloc and 3 non-Soviet-bloc. The references to the English-language publications read as follows: R. Nagel, Ch. Tambowski, H. W. Post, J. Org. Chem. 16, 1768, 1951; Bellamy, Gerard, Lappert, J. Chem. Soc., June, 2412, 1958.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut im. D.I. Mendeleyeva (Moscow Institute of Chemistry and Technology im. D.I. Mendeleyev)

SUBMITTED: February 28, 1961

Card 4/4

KRESHKOV, A.P.; BORK, V.A.; BONDAREVSKAYA, Ye.A.; MYSHLYAYEVA, L.V.; SYAVTSILLO, S.V.; SHEMYATENKOVA, V.T.; KORZHEV, P.P., red.; SHPAK, Ye.G., tekhn. red.

[Practical handbook on the analysis of monomeric and polymeric organosilicon compounds]Prakticheskoe rukovodstvo po analizu monomernykh i polimernykh kremniiorganicheskikh soedinenii. Pod red. A.P.Kreshkova. Moskva, Goskhimizdat, 1962. 544 p. (MIRA 16:1)

(Silicon organic compounds)

KRESHKOV, A. P.

43

PHASE I BOOK EXPLOITATION SOV/6034

Konferentsiya po khimii i primeneniyu fosfororganicheskikh soyedineniy. 2d, Kazan', 1959.

Khimiya i primeneniye fosfororganicheskikh soyedineniy; trudy (Chemistry and Use of Organophosphorus Compounds; Conference Transactions) Moscow, Izd-vo AN SSSR, 1962. 630 p. Errata slip inserted. 2800 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Kazanskiy filial.

Resp. Ed.: A. Ye. Arbuzov, Academician; Ed. of Publishing House: L. S. Povarov; Tech. Ed.: S. G. Tikhomirova.

PURPOSE: This collection of conference transactions is intended for chemists, process engineers, physiologists, pharmacists, physicians, veterinarians, and agricultural scientists.

COVERAGE: The transactions include the full texts of most of the scientific papers presented at the Second Conference on the Chemistry and Use of

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Organophosphorus Compounds held at Kazan' from 2 Nov through 1 Dec 1959. The material is divided into three sections: Chemistry, containing 67 articles; Physiological Activity of Organophosphorus Compounds, containing 26 articles; and Plant Protection, containing 12 articles. The reports reflect the strong interest of Soviet scientists in the chemistry and application of organophosphorus compounds. References accompany individual reports. Short summaries of some of the listed reports have been made and are given below.

TABLE OF CONTENTS:[Abridged]:

Synthesis and polymerization of esters of ethylvinyl, ethyl-β-chlorvinyl, and ethylallyl of phosphonic acids have been studied and the results described in detail.

Kreshkov, A. P., and D. A. Karateyev [Moskovskiy khimiko-tekhnologicheskiy institut im. D. I. Mendeleyeva (Moscow Institute of Chemical Technology imeni D. I. Mendeleyev)]. Study of the Interaction of Tetraalcoxysilanes and Alkyl(aryl)alcoxysilanes With Phosphoric Anhydride and With Other Chloroanhydrides of Phosphorus 324

Research in the field of organosiliconphosphorus compounds carried out by A. P. Kreshkov and others since 1952 is reviewed. The most probable mechanism of interaction of organosilicon compounds with inorganophosphorus compounds is pointed out, and the composition and structure of the resulting organosiliconphosphorus compounds containing the Si — O — P bond described. The reactions of monofunctional, bifunctional, and trifunctional organosilicon compounds with P_2O_5 are described in detail.

S/191/62/000/003/009/010
B101/B147

AUTHORS: Kreshkov, A. P., Karateyev, D. A., Fyurst, V.

TITLE: Methods for the quantitative determination of silicon, phosphorus, and boron in organoborosilicon and organophosphorosilicon compounds

PERIODICAL: Plasticheskiye massy, no. 3, 1962, 63-65.

TEXT: The following analysis methods are described: (1) Determination of Si, (a) wet oxidation of the substance to be analyzed, and determination as SiO_2; (b) photocolorimetric determination as silicon molybdenum blue at pH = 4.1-4.4 if no Si-C or Si-C-P bonds are present; (c) gravimetric determination of SiO_2 according to K. A. Andrianov et al. (ZhOKh, 26, 267 (1956)) if Si-C bonds are present. Error: 0.20-0.35%. (2) Determination of P in polymers with Si-O-P bonds: dissolution in 0.1 N NaOH, heating without boiling, cooling and titration of NaOH excess with 0.1 N HCl (methyl orange), use of an NaH_2PO_4 solution of similar concentration as standard solution; error: ± 1%. (3) Determination of B: dissolu-

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Methods for the quantitative ...

tion in NaOH, neutralization with 0.1 N HCl (methyl red), addition of mannite and titration with 0.1 N NaOH (phenolphthalein); error: within +0.22 and -2.85%. (4) Simultaneous determination of B and P: dissolution in 0.1-0.2 N NaOH, titration with 0.1-0.2 N HCl until NaH_2PO_4 forms (methyl orange), calculation of P content; addition of mannite, titration of mannitoboric acid with 0.1 N NaOH (phenolphthalein). Here, NaH_2PO_4 too, is titrated into Na_2HPO_4. Errors from three analyses were: -0.41 to +0.22 for B and -0.21 to +0.76% for P. There are 5 tables and 11 Soviet-bloc references.

Card 2/2

S/191/62/000/006/011/016
B110/B138

AUTHORS: Kreshkov, A. P., Bykova, L. N., Smolova, N. T.

TITLE: Quantitative determination of monomeric unsaturated carboxylic acids by the titration method in nonaqueous solutions

PERIODICAL: Plasticheskiye massy, no. 6, 1962, 51-53

TEXT: A simple and quick method has been developed for the quantitative determination of individual monomeric and dibasic unsaturated acids (maleic and fumaric acid) and their mixtures. They are potentiometrically titrated in isopropyl alcohol by means of 0.1 N benzene-methanol solution of tetramethyl ammonium hydroxide. ~0.3 mg--equiv. acid in isopropyl alcohol was mixed with 40 ml isopropyl alcohol, the electrodes inserted, stirred, and mixed with tetramethyl ammonium. The following monobasic unsaturated acids were titrated: crotonic, undecylenic, oleic, elaidic, erucic, sorbic, and linoleic acids. The acids insoluble in water with the exception of crotonic acid corresponded to the acidity of crotonic acid ($2.04 \cdot 10^{-5}$). The error of the

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quantitative determination is ≤ 1%. In addition, the following dibasic unsaturated acids were titrated: maleic, fumaric, itaconic, and citraconic acids. In isopropyl alcohol, each carboxyl group of dibasic acids is titrated individually, which is characterized by two breaks in the titration curves. The relative error in the quantitative determination of dibasic unsaturated acids is ≤ 1%. In isopropyl alcohol, the determination of mixtures of both dibasic acids alone, and of dibasic with monobasic acids is possible. Three breaks in the titration curve were found when a mixture of maleic and fumaric acid was titrated. The first break corresponds to the first step of neutralization of maleic acid, the second to the complete neutralization of fumaric acid, and the third to the second step of neutralization of maleic acid. Maleic acid was titrated with $V_m = 2(V_3 - V_2)$. The volume used for the neutralization of fumaric acid is determined from $V_F = V_3 - 2(V_3 - V_2)$. When maleic and itaconic acid are mixed, the first break corresponds to the first step of neutralization of maleic acid, the second to the first step of neutralization of itaconic acid, and the third to the combined neutralization of the second carboxyl groups of both acids. For the

Quantitative determination of...

neutralization of itaconic acid, $V_{It} = 2(V_2 - V_1)$ was used, and for the neutralization of maleic acid, $V_M = V_3 - 2(V_2 - V_1)$. For mixtures of dibasic and monobasic acids, the neutralization of dibasic acid requires $V = 2(V_3 - V_2)$, and the neutralization of monobasic acid, $V = V_3 - 2(V_3 - V_2)$. The relative error of the quantitative analysis is here $\leq 2\%$. There are 3 figures and 2 tables.

Card 3/3

KRESHKOV, A.P.; YAROVENKO, A.N.; ZEL'MANOVA, I.Ya.

Analysis of salts in nonaqueous solutions. Zhur.anal.khim. 17 no.7:781-784 O '62. (MIRA 15:12)

1. Mendeleev Moscow Chemico-tekhnological Institute.
(Salts)

KRESHKOV, A.P.; KIVICHOVA, A.N.; ZAGORSKAYA, A.A.

Preparation of crystalline copper hydrosilicate. Zhur. neorg. khim. 7 no.8:2023-2024 Ag '62. (MIRA 16:6)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni Mendeleyeva.

(Copper silicate)

43460

S/191/62/000/012/011/015
B101/B186

AUTHORS: Kreshkov, A. P., Myshlyayeva, L. V., Krasnoshchekov, V. V.

TITLE: Methods for determining silicon in organosilicon compounds and their comparative evaluation. Silicon determination in hydrolyzable organosilicon compounds

PERIODICAL: Plasticheskiye massy, no. 12, 1962, 51-55

TEXT: Si was determined gravimetrically, volumetrically and colorimetrically in hydrolyzable organosilicon compounds of the general formula SiR_4, where R is a methoxy to hexyloxy, phenyloxy, acetoxy, furfuryloxy or isothiocyanate radical, also in polymers of these compounds and in resins modified with these compounds. The utility of these analytic methods is compared. (1) Gravimetric determination by hydrolysis and weighing of the calcined SiO_2: Only the methoxy, phenoxy, acetoxy, furfuryloxy and isothiocyanate compounds can be hydrolyzed quantitatively and with a satisfactory rate in ammoniacal solution. Hydrolysis in HCl requires for the methoxy compound

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a HCl concentration of 1 : 10, for ethoxy and propoxy compounds 1 : 1, and for the higher radicals concentrated HCl. (2) The volumetric determination was performed according to L. Kalman, R. Vago (Magyar kem. folyoirat, 64, 123 (1958)): Hydrolysis of the substance analyzed with 40% aqueous-alcoholic HF solution, neutralization of H_2SiF_6 with KOH, hydrolysis of K_2SiF_6 with $CaCl_2$ and iodometric HCl determination. (3) Si was determined colorimetrically by treating the substance with 15% KOH and 5% ammonium molybdate, reduction with $Na_2SO_3 + Na_2SO_4$ and by colorimetry of the blue solution formed. Conclusion: For industrial laboratories and scientific research laboratories the volumetric method is recommended, since it requires little time (20-30 min) and its results almost equal those obtained in gravimetrical analysis. There are 7 tables.

KRESHKOV, A.P.

Theoretical principles of titration in nonaqueous media. Zhur.-anal.khim. 17 no.1:6-15 Ja-F '62. (MIRA 15:2)

1. D.I.Mendeleev Moscow Chemicotechnological Institute.
(Titration)

KRESHKOV, A.P., prof.; KRESHKOVA, Ye.K., assistent

Anhydrous solutions. Khim. v shkole 17 no.3:3-10 My-Je '62.
(MIRA 15:6)
(Solution (Chemistry))

S/075/62/017/003/004/004
1017/1027

AUTHORS. Kreshkov, A. P., Bork, V. A. and Shryrkova, R. A.

TITLE: Determination of ≡ SiH bonds containing organosilicon compounds by amperometric titration in ethanol-benzene solution

PERIODICAL: Zhurnal analyticheskoy khimii, v.17, no. 3, 1962, 359-361

TEXT: A critical review includes previous works by the author using non-aqueous solutions. The new method is based on the reaction

$$2\,HgCl_2 + \equiv SiH \rightarrow Hg_2Cl_2 + \equiv SiCl + HCl$$

carried out by titration of the sample with mercuric chloride, and using LiCl dissolved in a mixture of methanol and menzene. Procedure: 0.07-0112 g of the sample, a hydrogen-containing organosilicon compound are dissolved in benzol and diluted to 25 ml. 0.5-2 ml of this solution is made up to 25 ml with a benzene-methanol mixture (1:1), containing 0.3 mol/l LiCl. The solution is mixed with a glass stirrer and a quantity of metallic mercury is introduced together with a mercury electrode. The polarographic wave was measured at E = −0.8V. After this, a solution of $HgCl_2$ in a CH_3OH/C_6H_6 (1:1) mixture containing 3 g $HgCl_2$ in 100 ml is added from a microburet, and the height of the wave measured after the addition of each portion of $HgCl_2$ solution. The results are plotted on a graph of the volume of added $HgCl_2$ vs. the height of the wave. The diagrams show the

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volume of $HgCl_2$ necessary to obtain the end point. Typical diagrams show determinations of synthetic and industrial mixtures. The results of three series of experiments show that the method permits titrations of alkylchlorosilanes containing ≡ SiH bonds; successful determinations are carried out with 0.001 g CH_3SiHCl_2 containing 1.2×10^{-5} g hydrogen (with silicon). The determination of hydrogen bonded with silicon in alkylchlorosilanes (CH_3SiHCl_2 + $CH_3C_6H_4SiCl_2$) is successful for the range 0.1 – 0.008%. The determination of ethoxysilanes ($(C_2H_5O)_3SiH$ and $(C_2H_5O_4)Si$) by this method gives good results for a very wide range of concentrations of the compound being determined; the % error varies from ± 0.01 – 0.60 (absolute). There are 3 figures and 1 table.

ASSOCIdTION: Moskovskiy khimiko-tekhnologicheskiy institut im. D. I. Mendeleyeva (Moscow Chemical-Technological Institute im. D. I. Mendeleyev)

SUBMITTED: June 22, 1961

KRESHKOV, A.P.; VASIL'YEV, V.I.

Differentiated determination of weak bases by the method of spectrophotometric titration in nonaqueous solutions. Zhur.anal.khim. 17 no.8:908-911 N '62. (MIRA 15:12)

1. Mendeleev Chemico-Technological Institute.
(Bases (Chemistry)) (Spectrophotometry)

KRESHKOV, A.P.

"Quantitative microchemical analysis of minerals and ores", practical guide by I.P. Alimarin, B.I. Frid. Reviewed by A.P. Kreshkov. Zhur.anal.khim. 17 no.9:1122 D '62. (MIRA 16:2)
(Mineralogical chemistry)
(Alimarin, I.P.) (Frid, B.I.)

KRESHKOV, A. P.; BYKOVA, L. N.; RUSAKOVA, M. S.; KAZARYAN, N. A.

Potentiometric method of analyzing mixtures of organic and nitric acids in nonaqueous media. Zav.lab. 28 no.1:11-13 '62. (MIRA 15:2)

1. Moskovskiy khimiko-tekhnologicheskiy institut i Yaroslavskiy tekhnologicheskiy institut.
(Acids, Organic) (Nitric acid)
(Potentiometric analysis)

S/032/62/028/002/003/037
B101/B110

AUTHORS: Kreshkov, A. P., Bork, V. A., and Shvyrkova, L. A.

TITLE: Quantitative determination of hydrogen-containing organosilicon compounds

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 2, 1962, 151 - 154

TEXT: Two methods are described which are based on the formation of Hg_2Cl_2 formed by reaction of $HgCl_2$ with hydrogen bound to Si. In the phototurbidimetric method, the optical density of the Hg_2Cl_2 suspension is determined by an ФЭК-М (FEK-M) photocolorimeter with yellow light filter. Acetone, methyl-ethyl ketone, or their mixtures with benzene were used as solvents. All solvents produced proportional dependence of the optical density on the concentration of the hydrogen-containing organosilicon compounds. 75% benzene + 25% methyl-ethyl ketone was found to be optimum. When determining hydrogen in $CH_3C_6H_5SiHCl$, the presence of phenyl-methyl dichloro silane reduces the optical density. A special calibration scale

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must, therefore, be plotted for determining the $CH_3C_6H_5SiHCl$ content in phenyl-methyl dichloro silane. The optimum weighed portion of hydrogen-containing organosilicon compound is determined by a preliminary test. The analysis is conducted by comparing the optical densities of two specimens, a standard solution of the hydrogen-containing compound (0.03 g in 50 ml of benzene) being added to one specimen. $HgCl_2$ (2 g in 100 ml of benzene (75%) + methyl-ethyl ketone) is added to both specimens, and the optical density is measured after 1 hr. This method permits the determination of $5 \cdot 10^{-5}$% of Si-bound hydrogen. The maximum relative error is 10%. The standard solution may be used a month. For the gravimetric method, the compound containing an SiH bond is dissolved in an anhydrous solvent, mixed with 2% $HgCl_2$ solution, and after 1 hr the Hg_2Cl_2 precipitate is filtered off through a glass filter, rinsed with the solvent, dried for 10 min at 90 - 100°C, and then weighed. This method permits the determination of $2 \cdot 10^{-3}$% of Si-bound hydrogen. There are 4 tables and 6 references: 3 Soviet and 3 non-Soviet. The two references to English-language publications read as follows: J. L. Speier, R. Zimmerman, J.

Quantitative determination of...

S/032/62/028/002/003/037
B101/B110

Webster, J. Amer. Chem. Soc., 78, 2278 (1956); H. V. George, C. D. Lichtenwalter, H. Gilman, J. Amer. Chem. Soc., 81, 978 (1959).

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut im. D. I. Mendeleyeva (Moscow Institute of Chemical Technology imeni D. I. Mendeleyev)

Card 3/3

S/079/62/032/007/002/007
I032/I232

AUTHORS: Kreshkov, A. P., Myshlyayeva, L. V. and Soboleva, D. A.

TITLE: An investigation of the interaction of trimethyl-methoxysilane with an aqueous alkaline solution of sodium aluminate

PERIODICAL: Zhurnal obshchei khimii, v. 32. no. 7, 1962, 2190-2193

TEXT: The reaction of trimethyl-methoxysilane with sodium aluminate in an aqueous solution leads, under certain conditions, to the formation of a crystalline product, sodium bis-(triimethylsilyl)-aluminate. The reaction mechanism is described as:

$$(CH_3)_3SiOCH_3 + H_2O \rightleftarrows (CH_3)_3SiOH + CH_3OH$$

$$2(CH_3)_3SiOH + NaAlO_2 \rightarrow [(CH_3)_3Si]_2O_2AlONa + H_2O$$

A side reaction of condensation of trimethyl-silanol into hexamethyl-disiloxane takes place.
The method of preparation of sodium bis-(trimethylsilyl)-aluminate, and the product obtained, results of its structure determination by X-rays, its infra red spectrum, and its properties are given. It crystallises in the form of needles. The birefringent crystals are light polarising; could not be fused, and carbonised when heated. There are 3 figures and 1 table.

ASSOCIATION: Moskovskii khimiko-tekhnologicheskii institut im. D. I. Mendeleyeva (Moscow Chemical-Technological Institute im. D. I. Mendeleyev)

SUBMITTED: July 10, 1961

Card 1/1

KRESHKOV, A.P.; BYKOVA, L.N.; SHEMET, N.Sh.

Nonaqueous solutions. Part 15: Study of the differentiating properties of organic solvents with respect to bases. Zhur.ob.khim. 32 no.8:2397-2402 Ag '62. (MIRA 15:9)
(Solvents) (Aniline)

S/079/62/032/012/001/008
D424/D307

AUTHORS: Kreshkov, A.P., Chivikova, L.N. and Zagorovskaya, A.A.

TITLE: A new method for the production of hydrosilicates in a nonaqueous medium

PERIODICAL: Zhurnal obshchey khimii, v. 32, no. 12, 1962, 3864-3867

TEXT: The synthesis of silicates is important in connection with the development of inorganic polymers. Although known methods for synthesizing silicates by the fusion of metallic oxides with silica and by precipitating aqueous solutions of alkali metal silicates with metallic salts have disadvantages, notably variability of composition and lack of crystallinity in the products, which are avoided by working nonaqueous solutions, the previous methods of so working had only a limited applicability. It has now been found that silica is dissolved by glycerol solutions of sodium glyceroxide to give a highly reactive sodium glycero-silicate

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($C_3H_7O_6NaSi$) which could be isolated by precipitation with alcohol; its infrared spectrum showed the presence of a ≡C-O-Si≡ group. The trituration of acetates or sulfates or various metals with appropriate amounts of glycerol solutions of this compound, sometimes with gentle heating, gave homogeneous masses from which the corresponding silicates were isolated by pouring them into hot water at a controlled pH. The following silicates were so obtained: $CaO.SiO_2.3H_2O$ (crystalline); $2CaO.SiO_2.1H_2O$ (crystalline); $3.2ZnO.SiO_2.3H_2O$ (glassy); $CoO.SiO_2.4H_2O$ (glassy); $NiO.SiO_2.3H_2O$ (glassy); $3.2Fe_2O_3.SiO_2.7H_2O$ (isotropic granules); and $1.3MgO.SiO_2.H_2O$ (amorphous mass threaded with fibers having feeble light-polarizing properties). Thermograms of monocalcium silicate and cobalt silicate are given showing polymorphic transformations and decompositions. There are 3 figures and 1 table.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut im. D.I. Mendeleyeva (Moscow Institute of Chemical Technology, im. D.I. Mendeleyev)

SUBMITTED: December 16, 1961

Card 2/2

KRESHKOV, A.P.; BYKOVA, L.N.; KAZARYAN, N.A.

Differentiating the properties of organic solvents with respect to acids. Zhur.prikl.khim. 35 no.7:1575-1580 Jl '62. (MIRA 15:8)

(Solvents) (Acids)

ACCESSION NR AM4006922 BOOK EXPLOITATION S/

Kreshkov, A. P.; Bork, V. A.; Bondarevskaya, YE. A.; My*shlyayeva, L. V.; Syavtsillo, S. V.; Shemyatenkova, V. T.

Practical handbook on analysis of monomeric and polymeric silicones (Prakticheskoye rukovodstvo po analizu monomerny*kh i polimerny*kh kremniyorganicheskikh soyedineniy), Moscow, Goskhimizdat, 1962, 544 p. illus., biblio., index. Errata slip inserted. 6,000 copies printed.

TOPIC TAGS:monomeric silicone, polymeric silicone, silicon, carbon, quality control, lacquer, enamel

PURPOSE AND COVERAGE: This book is a handbook on analysis of monomeric and polymeric silicone compounds. It gives the fundamentals of the theory and modern chemical, physical, and physical-chemical methods of analyzing silicon compounds, methods of determining their physical constants and structure, methods of analyzing the basic chemical products used in their production, and also the methods used in experimental and industrial facilities for quality control. The book is intended for engineers, technicians, and researchers of research and plant laboratories and also for students and graduate students in the field of elemento-organic compounds.

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ACCESSION NR AM4008922

TABLE OF CONTENTS [abridged]:

SUB CODE: CH SUBMITTED: 30Nov62 NR REF SOV: 584

OTHER: 568 DATE ACQ: 29Jul63

Card 2/2

KRESHKOV, A.P.; YAROVENKO, A.N.; ZEL'MANOVA, I.Ya.

Quantitative determination of salts and their mixtures with acids and bases by potentiometric titration in a methyl ethyl ketone medium. Dokl. AN SSSR 143 no.2:348-350 Mr '62. (MIRA 15:3)

1. Predstavleno akademikom I.V. Tananayevym.
(Salts)
(Potentiometric analysis)

KRESHKOV, A.P.; BORK, V.A.; APARSHEVA, M.I.

Amperometric titration of alkylchlorosilanes in methanol-benzene and acetic acid media. Zhur.anal.khim. 18 no.10:1149-1154 O '63. (MIRA 16:12)

1. Moskovskiy khimikotekhnologicheskiy institut imeni D.I. Mendeleyeva.

KRESHKOV, A.P.; BYKOVA, L.N.; SMOLOVA, N.T.

Methods of analysis of dicarboxylic acids and their mixtures.
Lakokras.mat.i ikh prim. no.1:45-51 '63. (MIRA 16:2)
(Acids, Organic) (Resins, Synthetic)
(Chemicsty, Analytical)

KUSHIKOV, A.P.; BYKOVA, L.N.; SMOLOVA, N.T.

Potentiometric method for determining dicarboxylic acids used for the manufacture of synthetic resins. Lakokras. mat. i ikh prim. no.3:50-54 '63. (MIRA 16:9)
(Resins,Synthetic) (Acids) (Potentiometric analysis)

KRESHKOV, A.P.

More consideration to be given to the chemical-analytical control of the production of plastics. Plast.massy no.4:1-3 '63. (MIRA 16:4)
(Plastics industry) (Production control) (Chemistry, Analytical)

S/191/63/000/004/012/015
B101/B186

AUTHORS: Kreshkov, A. P., Drozdov, V. A., Tarasyants, R. R.

TITLE: Analysis of alkyl silane phosphoric acids by titration in nonaqueous media

PERIODICAL: Plasticheskiye massy, no. 4, 1963, 57 - 60

TEXT: A titration method was developed to allow of rapidly determining the acid content of synthesis residues and the phosphorus or $OPO(OH)_2$ content in phosphorus-containing organosilicon compounds. For this purpose, the authors studied the titration of alkylsilane phosphoric acids synthesized in absolute ether by the following equation: $(4-n)MH_2PO_4+R_nSiCl_{4-n}\rightarrow(4-n)MCl + R_nSi[OPO(OH)_2]_{4-n}$; M = K or Na, R = CH_3, C_2H_5, $ClCH_2(CH_3)_2$, or $CH_3(CH_2=CH)$. The synthesized compounds are highly viscous liquids which cannot be purified either by crystallization or by vacuum distillation. They are analyzed by potentiometric titration. The curve mg titrant versus mv potential was plotted, and the point of equivalence was determined graphically. The following results for trimethyl silane phosphoric acid

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Analysis of alkyl silane...

are given by way of example: (1) Titration of lithium ethylate in methanol passes two stages according to the reaction $(CH_3)_3SiOPO(OH)_2 + CH_3OLi \rightarrow (CH_3)_3SiOPO(OH)OLi + CH_3OH$; $(CH_3)_3SiOPO(OH)OLi + 2CH_3OLi \rightarrow (CH_3)_3SiOCH_3 + Li_3PO_4 + CH_3OH$. In ethyl, isopropyl, and n-butyl alcohols as well as in acetonitrile, acetone, methyl-ethyl ketone and methyl butyl ketone, the reaction takes place in a single stage forming immediately trimethyl methoxy silane and trilithium phosphate with the consumption of 3 moles titrant per mole of acid. The potential jump is 300 - 350 mv. (2). Titration of trimethyl silane phosphoric acid with potassium methylate or tetramethyl ammonium hydroxide in all media follows the reaction $(CH_3)_3SiOPO(OH)_2 + CH_3OK \rightarrow (CH_3)_3SiOCH_3 + KH_2PO_4$. (3) Titration with sodium methylate in isopropyl-n-butyl or benzyl alcohols is the same as titration with potassium methylate. In methanol or ethanol, however, two potential jumps are observed corresponding to the successive consumption of two equivalents of the titrant. The first jump corresponds to the formation of sodium trimethyl silane hydrophosphate. In acetonitrile and in ketones, 1 mole of titrant per mole of acid is consumed for titration with sodium methylate. The

Analysis of alkyl silane...

potential jumps are between 300 and 350 mv. (4) The study on use of quinizarine, bromine-phenol blue, brilliant yellow, alkali blue, and methyl red as indicators during titration showed that the color reversion of methyl red corresponded most precisely to the points of equivalence determined potentiometrically. There are 5 figures and 1 table.

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L 12581-63 EPR/EWP(j)/EPF(c)/EWT(m)/BDS ASD Ps-4/Pc-4/Pr-4
RM/WW/MAY
ACCESSION NR: AP3003314 S/0191/63/000/007/0058/0061

AUTHORS: Kreshkov, A. P.; Drozdov, V. A.; Tarasyants, R. R. 70

TITLE: Nonaqueous titration of monomeric and polymeric organic borosilicate compounds

SOURCE: Plasticheskiye massy, no. 7, 1963, 58-61

TOPIC TAGS: boron, silicon, alkylsilane, arylchlorosilane, acetone, acetonitrile, methylethylketone, diethylketone, methylbutylketone, nitromethane, potassium methoxide

ABSTRACT: A new method of analysis of organic borosilicate compounds based on a nonaqueous potentiometric or visual titrimetric method has been developed. This is a rapid and accurate method, and the same sample can be used for determination of borosilicate compounds as well as for alkyl and arylchlorosilanes which are the starting products. The solvents investigated as titration media were acetone, acetonitrile, methylethylketone, diethylketone, methylbutylketone, nitromethane and several alcohols. The titrant used was potassium methoxide. The best-suited solvents were found to be methyl alcohol, methylethylketone, nitromethane and acetone. An interesting fact was found that, by addition of

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L 12581-63
ACCESSION NR: AP3003314

small amounts of glycerin, it was possible to control the magnitude of the potential drop between the breaks. Quinizarin and 1.5-dioxianthraquinone were used as indicators for visual titration. The visual titrations are more applicable for individual compounds and not in mixtures. Orig. art. has: 3 tables and 4 figures,

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 30Jul63 ENCL: 00

SUB CODE: ML NO REF SOV: 006 OTHER: 004

Card 2/2

L 18958-63 EWP(j)/EPF(c)/EWT(m)/BDS ASD Pc-4/Pr-4 RM/WW/MAY

ACCESSION NR: AP3006540 S/0191/63/000/009/0044/0047 67

AUTHORS: Kreshkov, A. P.; Mikhaylenko, Yu. Ya.; Senetskaya, L. P.; Uklonskiy, D. A.

TITLE: Determining vinyl groups in monomers and polymers of organosilicon compounds by the infrared spectroscopic method.

SOURCE: Plasticheskiye massy*, no. 9, 1963, 44-47.

TOPIC TAGS: organosilicon monomer, polymer, vinyl group, infrared, spectroscopy, methylvinyldichlorosilane, tetramethyldivinyl siloxane.

ABSTRACT: Method presented for the quantitative determination of vinyl groups in organosilicon compounds is based on calculating the mean integral of absorption in the IR region associated with deformed vibrations of the vinyl group. The vinyl integral coefficient values practically coincide in methylvinyldichlorosilane and its hydrolysis products at 3.94 x 10^5 mol · cm^2. The method was applied to

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ACCESSION NR: AP3006540

determination of vinyl composition with a relative error of ±5% in mixtures of methylvinyldichlorosilane and dimethyldichlorosilane and in polymers based on these mixtures as well as in tetramethyldivinyl siloxane. Orig. art. has: 5 tables and 2 equations.

ASSOCIATION: none.

SUBMITTED: 00 DATE ACQ: 30Sep63 ENCL: 00

SUB CODE: CH, MA NO REF SOV: 008 OTHER: 009

Card 2/2

BONDAREVSKAYA, Ye.A.; KRESHKOV, A.P.; SYAVTSILLO, S.V.; KUZNETSOVA, V.M.

Elementary analysis of fulorine-containing organosilicon compounds. Trudy Kom.anal.khim. 13:24-27 '63. (MIRA 16:5)
(Silicon organic compounds) (Fluroine organic compounds)

L 12637-63 EWP(j)/EPF(c)/EWT(m)/BDS ASD Pc-4/Pr-4 RM/WW

ACCESSION NR: AT3002345 S/2513/63/013/000/0159/0165

63
62

AUTHOR: Kreshkov, A. P.; Kuchkarev, Ye. A.

TITLE: Quantitative spectroscopic determination of silica in soluble organosilica compounds

SOURCE: AN SSSR. Komissiya po analiticheskoy khimii. Trudy*. v. 13, 1963 Organicheskiy analiz, 159-165

TOPIC TAGS: spectroscopy, silica, ethanol, o-xylol, cobaltous chloride

ABSTRACT: A spectroscopic method for the determination of silica in organosilica compounds without their prior chemical decomposition has been developed. The conditions for the analysis must be that the temperature of the electrode containing the sample must be low in order to avoid evaporation. The electrode must have a porous base. The introduction of the internal standard into the liquid organic compound presents a certain problem since the salts of metals in most cases are insoluble in organic liquids. This problem was solved by dissolving these salts in polar organic solvents before mixing them with the organosilica compounds. The system investigated in our experiment as an organic solvent was 96% ethanol and o-xylol. The solubility of CoCl sub 2 in 96% ethanol-o-xylol mixture was also

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L 12637-63
ACCESSION NR: AT3002345

investigated. The homogeneity of the sample is one of the main factors affecting the accuracy of the analysis. The concentration of the internal standard must be equal for all samples in relation to the amount of sample. The samples must be freshly mixed with the solvents before analysis. The absolute alcohol in the mixture will hydrolyze with water from the air upon standing and it will result in great errors. The experimental results with some monomeric and polymeric organosilica compounds gave results with relative accuracies of plus or minus 10%. The silica content in the organic material must not be less than 1%. Orig. art. has: 4 tables and 2 graphs.

ASSOCIATION: Moskovskiy tekhnologicheskiy institut im. D. I. Mendeleyeva (Moscow chemical engineering institute). Kafedra analiticheskoy khimii (Department of analytic chemistry).

SUBMITTED: 00 DATE ACQ: 13Jun63 ENCL: 00

SUB CODE: CH NO REF SOV: 002 OTHER: 002

mcs/pw
Card 2/2

L 12975-63
ACCESSION NR: AT3002348 S/2513/63/013/000/0290/0309

AUTHOR: Kreshkov, A. P. 44

TITLE: New investigation in the field of analysis of organic compounds in non-aqueous solvents

SOURCE: AN SSSR. Komissiya po analiticheskoy khimii. Trudy*, v. 13, 1963. Organicheskiy analiz, 290-309

TOPIC TAGS: solvent, non-aqueous titration, cresol, naphthol, methylethylketone

ABSTRACT: The article presents a complete summary of the work done in the field of non-aqueous titration. It points to its unlimited possibilities in the field of analytical chemistry. It also points out the fact that only by the non-aqueous acid-base titration method is it possible to determine a compound independently of its pK values of the aqueous solutions, such as isomers, homologous chemical compounds, substances which have no relationship with the usual acids or bases, and multicomponent mixtures of various materials. On the basis of theoretical assumptions, it may be concluded that, under the influence of various solvents, a change takes place not only in the strength of the electrolytes but also in the relation of their strength. This is especially applicable to the acids and

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bases which have low dielectric penetration when dissolved in solvents. Non-aqueous titrations are especially important in many cases where a differential titration can be obtained of the mixtures and isomers without their prior separation from each other. Using high frequency titration with benzene-methanol solvent and potassium methylate titrant, it is possible to titrate o-, m-, and p-cresols and Alpha and Beta-napthols. The Soviet scientists developed potentiometric method of titration mixtures of primary, secondary and tertiary amines using acetic acid solvent. They also developed a potentiometric method of titration of organic bases in methylethylketone solvent with HClO sub 4 titrant in methylethylketone. The organic bases were titrated with tetraethylammonium hydroxide in 5:1 solution of benzene-methanol. This titrant can be used with great success in potentiometric conductometric and indicator type titrations. The proposed method can be used for the titration of mono-, di-, and tribasic acids, phenols, naphthols and other multicomponent acid mixtures. A quantitative method of analysis of individual nitrophenols and their multicomponent mixtures in methylethylketone solvent was also developed. Dibasic carbonic acids titrate better in benzene-methanol medea with tetramethylammonium hydroxide. Phenols are titrated conductometrically in pyridine medea with tetrabutylammonium hydroxide. Non-aqueous titrations have been frequently used in pharmaceutical work such as alkaldids, organic basic salts and organic acids. Analysis of high molecular compounds of petroleum were made in benzene-alcohol solvents, also monomeric and polymeric

L 12975-63 0
ACCESSION NR: AT3002348

silicaorganic compounds show acid or basic properties in non-aqueous solvents and thus, can be analyzed. Other uses of non-aqueous titrations are in the food industry for the analysis of basic and acidic food ingredients which are insoluble in water by emulsion in such products as tabaco, wool, paraphin and others. Orig. art. has: 6 graphs.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut im. D. I. Mendeleyeva. Kafedra analiticheskoy khimii (Moscow Institute of Chemical Technology. Department of Analytical Chemistry)

SUBMITTED: 00 DATE ACQ: 13Jun63 ENCL.: 00

SUB CODE: CH NO REF SOV: 054 OTHER: 077

Card 3/3

KRESHKOV, A.P.; ALDAROVA, N.Sh.

Analysis of mixtures of organic bases by titration in a methylethyl ketone medium. Trudy Kom.anal.khim. 13:315-319 '63. (MIRA 16:5)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I.Mendeleyeva, kafedra analiticheskoy khimii.
(Bases) (Potentiometric analysis)

KRESHKOV, A.P.; RYBAL'CHENKO, M.A.

Quantitiative determination of epoxide groups in epoxy resins according to infrared absorption spectra. Trudy Kom.anal.khim. 13:388-393 '63. (MIRA 16:5)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I.Mendeleyeva, kafedra analiticheskoy khimii.
(Epoxy resins--Absorption spectra)

KRESHKOV, A.P.; YAROVENKO, A.N.; ZEL'MANOVA, I.Ya.

Differential titration of salts in nonaqueous solutions. Izv.-vys.ucheb.zav.;khim.i khim.tekh. 6 no.1:15-23 '63. (MIRA 16:6)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I.Mendeleyeva, kafedra analiticheskoy khimii.
(Salts) (Titration)

KRESHKOV, A.P.; VASIL'YEV, V.I.

Differential determination of weak bases by the method of spectrophotometric titration in nonaqueous solutions. Izv.vys.-ucheb.zav.;khim.i khim.tekh. 6 no.1:24-30 '63. (MIRA 16:6)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I.Mendeleyeva, kafedra analiticheskoy khimii.
(Bases (Chemistry)) (Spectrophotometry)

KRESHKOV, A.P.; YAROVENKO, A.N.; ZEL'MANOVA, I.Ya.

Analysis of mixes of salts and acids by the potentiometric method in nonaqueous solutions. Zav.lab. 29 no.3:295-298 '63. (MIRA 16:2)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni Mendeleyeva.

(Acids, Organic)
(Potentiometric analysis)
(Salts)

L 18133-63 EWP(j)/EPF(c)/EWT(m)/BDS AFFTC/ASD/ESD-3 Pc-4/Pr-4
RM/WW/MAY

ACCESSION NR: AP3004563 S/0032/63/029/008/0924/0926

AUTHORS: Kreshkov, A. P.; My*shlyayeva, L. V.; Krasnoshchekov, V. V.

TITLE: Benzidine method for determination of silicon in some organic silicon compounds. Author's certificate No. 151858. Bulletin of Inventions, No. 12 (1962)

SOURCE: Zavodskaya laboratoriya, v. 29, no. 8, 1963, 924-926

TOPIC TAGS: silane , silicone , benzidine, fluosilicic acid, fluosilicate

ABSTRACT: The method is based on the decomposition of monomeric and polymeric alkoxysilanes by 0.3-normal ethanol solution of hydrofluoric acid, and on the precipitation of the formed fluosilicic acid by benzidine. The complex is subsequently acidimetrically titrated. From 0.03-0.05 grams of the organic silicon compound are placed in a 150-200 ml polyethylene beaker containing 10 ml of a 0.3-normal ethanol solution of HF. The mixture is stirred for 2 minutes, and 10 ml of a 1% alcoholic solution of benzidine are added to it. The precipitate is separated on a filter and washed with alcohol. The filter is then placed in a 250-ml Erlenmeyer flask, to which 150 ml of hot water are added. The H_2SiF_6 is titrated with 0.1-normal KOH, using phenolphthalein as indicator. This procedure

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ACCESSION NR: AP3004563

may be replaced by titration of the surplus HF. Both methods were tested on a number of alkoxysilanes, providing a maximum error of 0.19%. The benzidine-fluosilicate complex of the formula $C_{12}H_{12}N_2 \cdot H_2SiF_6$ forms crystalline needles with double refraction and an extinction angle of 42°. Orig. art. has: 2 tables.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 26Aug63 ENCL: 00

SUB CODE: CH NO REF SOV: 002 OTHER: 001

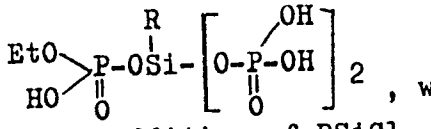
Card 2/2

S/079/63/033/001/020/023
D204/D307

AUTHORS: Kreshkov, A. P., Karateyev, D. A., Fyurst, V. and Pavlova, E. N.

TITLE: A study of the reactions of dialkyldichlorosilanes and alkyltrichlorosilanes with potassium dihydrogen phosphate

PERIODICAL: Zhurnal obshchey khimii, v. 33, no. 1, 1963, 261-265

TEXT: Compounds  , where R=Me or Et were obtained by the dropwise addition of $RSiCl_3$ in absolute ether to KH_2PO_4/abs. Et_2O, over 1 hour, with cooling. The mixtures were then gently boiled for 3 hours, and the solid products were subsequently refluxed for 7 - 8 hours with abs. alcohol. The solutions were then filtered and the alcohol was removed from the filtrates. The

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S/079/63/033/001/020/023
D204/D307

A study of the reactions ...

products were then dried to constant weight at 100 - 150°C. Compounds $(HO)_2\overset{\overset{O}{\|}}{P}\text{-}O\text{-}Si(R)(R')\text{-}O\text{-}\overset{\overset{O}{\|}}{P}(OH)_2$ (where (a) R=R'=Me, (b) R=R'=Et, and (c) R=Me, R'=vinyl) were prepared in an anlogous manner, from ethereal KH_2PO_4 and (a) Me_2SiCl_2, (b) Et_2SiCl_2 and (c) $CH_3(CH_2{=}CH)SiCl_2$, except that the refluxing with absolute alcohol was only for 2 hours. The above 5 compounds, which were thus prepared in 85 - 85% yields, are new. Two of the structures were confirmed by ir spectroscopy. There are 2 figures and 2 tables.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut imeni D. I. Mendeleyeva (Moscow Institute of Chemical Technology imeni D. I. Mendeleyev)

SUBMITTED: December 1, 1961

Card 2/2

L 12681-63

ACCESSION NR: AP3000650 EWP(1)/BDS/ S/0080/63/036/003/0639/0644

EPF(c)/EWT(m) ASD Pc-4/Pr-4 RM/GW

AUTHOR: Kreshkov, A. P.; Chivikova, A. N.; Zagorovskaya, A. A.

65
64

TITLE: Interaction of tetraethoxysilane with magnesium glyceride in glycerol solution

SOURCE: Zhurnal prikladnoy khimii, v. 36, no. 3, 1963, 639-644

TOPIC TAGS: tetraethoxysilane, Mg glyceride, Mg glycerosilicates, hydrolysis, hydrated Mg silicates, MgO to 1:85 SiO sub 2 ratio

ABSTRACT: The reaction between tetraethoxysilane and Mg glyceride was carried out in a flask with stirrer and cooling means: to a charge of 25 g Mg acetate in 100 g of glycerol tetraethoxysilane was added dropwise with agitation in such quantities that the MgO:SiO sub 2 ratio was 1:1, 1:2, or 1:4. The reaction was continued 10-12 hours at 125-155° to homogeneity. Viscous yellow products, starting to melt at 150°, purified from ethanol, were amorphous Mg glycerosilicates. Traces of moisture in the reaction lowered the organic content in the Mg glycerosilicates. The proposed formulas, compositions, and IR-curves are given. Hot-water hydrolysis gave hydrated Mg silicates. The extensive chemical and physical properties of these are tabulated; dissociation and dehydration curves are given. The maximum silicate ratio obtained was MgO:1.85 SiO sub 2, regardless of excess tetraethoxysilane in

Card 1/2 Associated: Moscow Inst. of Chemical Technology

KRESHKOV, A.P.; MYSHLYAYEVA, L.V.; SOBOLEVA, D.A.

Synthesis of tris (triphenylsiloxy) sodium polyalumoxane.
Dokl.AN SSSR 148 no.4:843-845 F '63. (MIRA 16:4)

1. Moskovskiy khimiko-tekhnologicheskiy institut im. D.I. Mendeleyeva. Predstavleno akademikom A.N.Nesmeyanovym.
(Silicon organic compounds) (Aluminum compounds)

S/020/63/148/004/020/025
B144/B101

AUTHORS: Kreshkov, A. P., Myshlyayeva, L. V., Soboleva, D. A.

TITLE: Synthesis of tris-(triphenyl-siloxy) aluminum and tetra-(triphenyl-siloxy) sodium polyalumoxane

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 4, 1963, 843-845

TEXT: Monomeric tris-(triphenyl-siloxy) aluminum (I) was economically synthesized for the first time from 0.02 M triphenyl-ethoxy silane (II) and 11 g sodium aluminate solution (III): $(C_6H_5)_3SiOC_2H_5 + H_2O \longrightarrow (C_6H_5)_3SiOH + C_2H_5OH$; $3(C_6H_5)_3SiOH + NaAlO_2 \longrightarrow [(C_6H_5)_3SiO]_3Al + NaOH + H_2O$. A mixture of II obtained by distillation in vacuo at 196-201°C and reprecipitation with petrol ether, along with III containing 19.2% Al_2O_3 and 20.3% Na_2O, was stirred for 40 min without heating and then for 4.5 hrs at 50-60°C. I forming at the surface of the mixture as a white solid substance was separated. The yield was 35% (related to II)

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Synthesis of tris-(triphenyl-siloxy) ...

and 1 - 2 (related to the molar Si:Al ratio). I is a nonmelting powder, soluble in diethyl ether and benzene and resistant to alkalies and heat. The product recovered in the filter after extraction of I contained 12.59% SiO_2, 17.96% Al_2O_3, 7.68% Na_2O, 46.34% C and 5.20% H. This yielded the formula $\left[(C_6H_5)_3SiO\right]_2AlO\left[\underset{ONa}{Al}-O\right]_5Al\left[(C_6H_5)_3SiO\right]_2 \cdot 18H_2O$ for tetra-(triphenyl-siloxy) sodium polyalumoxane (IV), a white powder insoluble in organic solvents and stable to alkalies; yield 55 - 60%. The new substances were subjected to thermal, spectral and x-ray analyses. The thermogram of I revealed 3 exothermic effects corresponding to a subsequent splitting-off of the triphenyl-siloxy groups at 500, 600, and 700°C. This is confirmed by the thermogram of IV which shows two exothermic effects due to the 2 triphenyl-siloxy groups bound to Al and 1 endothermic effect produced by dehydration. The IR spectra indicated an absorption maximum at 1065 cm^{-1} characteristic of the SiOAl group and further maxima at 700, 740, 997, 1123, 1432, and 1596 cm^{-1} which are indicative of phenylated silanes and siloxanes. X-ray analysis showed that I and IV have crystalline structure. There are 2 figures.

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S/020/63/148/004/020/025
B144/B101

Synthesis of tris-(triphenyl-siloxy) ...

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut im. D.I. Mendeleyeva (Moscow Institute of Chemical Technology imeni D.I. Mendeleyev)

PRESENTED: July 2, 1962, by A.N. Nesmeyanov, Academician

SUBMITTED: June 10, 1962

Card 3/3

L 12708-63 EPF(c)/BDS/EWT(m) Pr-4 RM/WW/JW
ACCESSION NR: AP3000301 S/0020/63/150/001/0099/0101

59
58

AUTHOR: Kreshkov, A. P.; Bykova, L. N.; Pevzner, I. D.

TITLE: The analysis of diamines and their mixtures by a non-aqueous titration method

SOURCE: AN SSSR. Doklady, v. 150, no. 1, 1963, 99-101

TOPIC TAGS: photometric titration, diamines, non-aqueous solvents, perchloric acid, chloroform-acetonitrile

ABSTRACT: A potentiometric titration of diamines and their mixtures in a medium of non-aqueous solvents is presented. Since many diamines are either insoluble in water or are very weak electrolytes, the volumetric methods of analysis in non-aqueous media has a greater perspective. The advantage is that, in the non-aqueous media, it is possible to determine the mixtures of diamine and their constants of dissociation which are very closely related by means of differentiation. The titration is performed with perchloric acid solution, 0.1 N, in a medium of chloroform-acetonitrile (4:1). From a number of investigated solvents chloroform-acetonitrile was found to be best for quantitative determination of diamines individually and in mixtures with a relative error of + or - 1% and + or - 3% respectively. The original article has: 2 tables and 2 figures.

Card 1/2

Association: Moscow Chemical and Technological Inst.

KRESHKOV, A.P.; BYKOVA, L.N.; KAZARYAN, N.A.; ALDAROVA, N.Sh.

Progress in the analysis of inorganic and organic compounds in nonaqueous solutions. Usp. khim. 31 no.4:490-527 '62. (MIRA 16:8)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I. Mendeleyeva.

KRESHKOV, A.P.; MYSHLAYAYEVA, L.V.; KHACHATURYAN, O.B.; KRASNOSHCHEKOV, V.V.

Conductometric analysis of silicon in organosilicon compounds.
Zhur. anal. khim. 18 no.11:1375-1379 N '63. (MIRA 17:1)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni
D.I. Mendeleyeva.

ACCESSION NR: AP4009839 S/0191/64/000/001/0065/0067

AUTHORS: Kreshkov, A.P.; My*shlyayeva, L.V.; Krasnoshchekov, V.V.

TITLE: Methods of silicon determination in silico-organic compounds and a comparative evaluation of these methods

SOURCE: Plasticheskiye massy*, no. 1, 1964, 65-67

TOPIC TAGS: substituted silanes, polysiloxanes, silicone rubber, oxysilanes, silicon determination, analytical chemistry

ABSTRACT: Because the recommended method of silicon determination by fusion in a bomb is not always expedient, the authors investigated and proposed other methods of Si determination in silico-organic compounds (SOO): most precise, but time consuming, is wet oxydation by a mixture of oleum and fuming nitric acid in quartz flasks with subsequent Si-determination by gravimetric and volumetric methods. SOO oxidation in a platinum cricible with the same acids is less precise than in a quartz flask but the volumetric tests is faster.

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ACCESSION NR: AP4009839

A fast method is based on the oxidation of SOC by a mixture of sulfuric and chromic acid in a stream of oxygen but it cannot be used with volatile substances. Si-determination by fusing in bomb with sodium peroxide corrodes the bomb and contaminates the substance. Some improvements, which give greater analytical accuracy, consist in oxidizing in open crucibles cooled in liquid air and in the use of sodium fluoride instead of ammonium fluoride in acidimetric titration. The use of nickel or Cr-Ni bombs instead of steel is recommended to avoid contamination. About 40 mono- and polymer SOC were analyzed by the authors using the most appropriate of the above methods and the results are consolidated in tables. The methods are explained and described in detail. Orig. art. has no figures, 3 formulas, 4 tables.

ASSOCIATION: None

SUBMITTED: 00	DATE ACQ: 10Feb64	ENCL: 00
SUB CODE: CH	NO REF SOV: 010	OTHER: 007

Card 2/2

KRESHKOV, A.P.; BYKOVA, L.N.; SMOLOVA, N.T.

Differentiating properties of organic solvents toward dicarboxylic acids. Izv.vys.ucheb.zav.; khim. i khim.tekh. 7 no.2:189-193 '64. (MIRA 18:4)

1. Kafedra analiticheskoy khimii Moskovskogo khimiko-tekhnologicheskogo instituta im. D.I.Mendeleyeva.

KRESHKOV, A.P.; MYSHLYAYEVA, L.V.; KHACHATURIAN, O.B.; KRASNOSHCHEKOV, V.V.

Potentiometric method for the determination of silicon in organosilicon compounds. Izv.vys.ucheb.zav.; khim. i khim.tekh. 7 no.2: 198-201 '64. (MIRA 18:4)

1. Kafedra analiticheskoy khimii Moskovskogo khimiko-tekhnologicheskogo instituta im. D.I.Mendeleyeva.

KRESHKOV, A.P.; BORK, V.A.; APARSHEVA, M.I.

Amperometric titration of unsaturated organosilicon compounds with a solution of iodine chloride in nonaqueous media. Izv. vys. ucheb. zav., khim. i khim. tekh. 7 no.5:742-746 '64
(MIRA 18:1)

1. Kafedra analiticheskoy khimii Moskovskogo khimiko-tekhnologicheskogo instituta imeni D.I. Mendeleyeva.

KRESHKOV, A.P.; BYKOVA, L.N.; KIRILLOVA, O.F.

High-frequency titration of aliphatic dicarboxylic acids in nonaqueous solutions. Izv.vys.ucheb.zav.; khim.i khim.tekh. 7 no.6:914-918 '64. (MIRA 18:5)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni Mendeleyeva, kafedra analiticheskoy khimii.

KRESHKOV, A.P.; MYSHLYAYEVA, L.V.; GENSHAFT, Yu.S.; KRASNOSHCHEKOV, V.V.

Interaction of silicohydrofluoric acid with benzidine. Zhur.neorg.khim. 9 no.1:183-186 Ja '64. (MIRA 17:2)

[redacted] V. A.P.; BY[redacted], I.N.; SMOLAVA, N.T.

Analyzing the isomers of phthalic acid and their mixtures by the method of potentiometric titration in nonaqueous solutions. Plast. massy no.10:49-53 '64. (MIRA 17:10)